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Martin G. Linihan  
Name Martin G. Linihan  
Signature

February 28, 2002  
Date of Signature

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of:

Barry C. Muffoletto et al.

Serial No.: 09/628,174

Group: 1775

Filed: May 1, 1997

Examiner: J. McNeil

For: METHOD FOR IMPROVING ELECTRICAL CONDUCTIVITY OF  
METALS, METAL ALLOYS AND METAL OXIDES

BRIEF IN SUPPORT OF APPEAL

Assistant Commissioner for Patents  
Washington, DC 20231

Sir:

Herewith is appellants' Brief on Appeal in triplicate together with payment of the appeal fee.

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Real Party In Interest

Wilson Greatbatch Ltd., owner by assignment of the above-identified application and the invention set forth therein, is the real party in interest.

Related Appeals And Interferences

There are no pending appeals or interferences related to this application.

Status Of Claims

Applicants hereby appeal the Examiner's Final Rejection dated August 28, 2001 rejecting claims 6 and 7.

Status Of Amendments

No amendments have been filed subsequent to the Final Rejection of August 28, 2001. The claims in their form as finally rejected by the Examiner are set forth in the attached Appendix.

Summary Of The Invention

Applicants' invention relates to treating metals, metal alloys and metal oxides to enhance their electrical conductivity. An illustrative area of use of the invention is in manufacturing electrodes for capacitors, batteries and the like. Metals and metal alloys have a native oxide present on the surface. This is an insulating layer and hence if the

material is to be used as a substrate for an electrode, the oxide has to be removed or made electrically conductive.

Applicants' invention enhances the electrical conductivity of metals, metal alloys and metal oxides which does not require additional heat treatment, which provides control over the density and depth of material introduced to the treated surface, which can be performed in a manner preventing substrate degradation and deformation, and which improves the quality of the treated surface.

In particular, applicants' invention for improving electrical conductivity of metals, metal alloys and metal oxides is applied to a substrate (p. 5, line 5; 10-Fig. 1) having an electrically insulating native oxide layer (p. 5, line 6; 12-Fig. 1) on a surface thereof. The substrate is selected from the group consisting of Group IVA, Group VA and Group VIA metals, aluminum, manganese, nickel, copper and stainless steel (p. 5, lines 9-14).

In accordance with the invention, there is deposited on the native oxide layer 12 a metal selected from the group consisting of Group IA and Group VIIIA metals (p. 5, lines 16-20; 14-Fig. 1). The depositing is carried out by a low temper arc vapor deposition process (p. 5, lines 20-23; 20-Fig. 2).

Upon completion of the foregoing, the native oxide layer is changed from being electrically insulating to being more electrically conductive (p. 5, line 27 to p. 6, line 13; 30-Fig. 3). The present invention advantageously does not require additional heat treatment and provides control over the density

and depth of the material introduced onto the treated surface thereby not affecting the bulk of the material. The treatment of the native oxide layer can be performed at a temperature sufficiently low so as to prevent substrate degradation and deformation (p. 3, lines 9-14).

Electrode material is applied onto the native oxide layer 12 so that the substrate 10 is usable as an electrode (p. 6, lines 14-26; 40-Fig. 4). The electrode material can be capacitor electrode material (p. 6, lines 20-26).

#### ISSUE

Whether claims 6 and 7 patentably distinguish over Evans under 35 USC 102.

#### GROUPING OF CLAIMS

Claims 6 and 7 can be grouped together.

#### ARGUMENT

1. The rejection of claims 6 and 7 under 35 USC 102 based on Evans is believed to be improper. The Evans disclosure is summarized on page 2 of the instant application. The substrate of applicants' invention advantageously does not require the heat treatment disclosed by Evans to incorporate ions into the oxide layer to increase the electrical conductivity thereof. That is because the substrate of applicants' invention has the metal deposited on the substrate surface by low temperature arc

vapor deposition. Claims 6 and 7 point out this important distinction over the substrate disclosed by Evans.

Contrary to the Examiner's position set forth in paragraph 3 of the Final Rejection, this distinction should be given patentable weight. The claims considered in In re Thorpe cited by the Examiner are significantly different from claims 6 and 7 of the instant application. The Thorpe application included process claims in the form of:

1. In the process of preparing a metal-modified novolac phenolic resin wherein....

The claims on appeal in Thorpe were product-by-process claims of which the following claim is typical:

44. The product of the process of claim 1.

Claims 6 and 7 of the instant application are not in the form of the product-by-process claim 44 of Thorpe. Rather, applicants' claims 6 and 7 are hybrid type claims. Applicants' claims 6 and 7 are in the form of the claims considered by the CCPA in In re Luck, 177 USPQ 523 (CCPA, 1973) wherein the Court clearly held that process limitations are to be considered in a product claim to patentably distinguish the product over the prior art.

Accordingly, the recitation in claims 6 and 7 of the instant application which calls for the metal deposited on the substrate surface by low temperature arc vapor deposition, which clearly distinguishes over the Evans disclosure, should be

considered in patentably distinguishing over the prior art Evans disclosure.


In view of the foregoing, claims 6 and 7 are believed to patentably distinguish over Evans within the meaning of 35 USC 102 and 35 USC 103.

CONCLUSION

The Board is respectfully requested to reverse the 35 USC 102 rejection of record, for the reasons set forth above, and find that claims 6 and 7 define patentable subject matter over the art of record.

Respectfully submitted,

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## Appendix

### Claims On Appeal

6. A substrate of improved electrical conductivity wherein said substrate is selected from the group consisting of Group IVA, Group VA and Group VIA metals, aluminum, manganese, nickel, copper and stainless steel and said substrate having a native oxide layer on a surface thereof, and wherein said substrate surface has deposited thereon by low temperature arc vapor deposition metal selected from the group consisting of Group IA and Group VIIIA metals for increasing the electrical conductivity of said native oxide layer.

7. A substrate according to claim 6 further including a coating on said native substrate surface of material rendering said substrate useable as an electrode in a capacitor.